

SUBTERRANEA BRITANNICA

Bulletin No. 17

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THE BULLETIN OF SUBTERRANEA BRITANNICA

No 17 - January 1983

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SUBTERRANEA BRITANNICA: EXECUTIVE COMMITTEE

Officers:

Sylvia P. Beamon, M.A., Chairman, Publication Secretary and Representative on the General Council of the Societe Francaise D'Etude des Souterrains - 16 Honeyway, Royston, Hertfordshire SG8 7ES (Tel: Royston (0763) 42120).

Paul W. Sowan, B.Sc., F.R.G.S., F.G.S., F.L.S., Secretary - 96A Brighton Road, South Croydon, Surrey CR2 6AD.

Eleanor Clark, Honorary Treasurer - 46 Sun Hill, Royston, Hertfordshire. (Tel: Royston (0763) 4279).

Committee Members:

Dave Barnes, Tom Doig, Rod Le Gear, Alan MacCormick, Maureen Mahony, Phil Marshall, Roger Morgan, Christopher Montague, Anne Smith, Margaret Walker

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Subterranea Britannica is in association with Societe Francaise D'Etude des Souterrains of France, Arbeitskreis fur Erdstallforschung of Germany and La Societe Belge D'Etude des Souterrains of Belgium.

Bulletin compiled by Sylvia P. Beamon with assistance from Tom Doig, Rod Le Gear, Deryck Laming and Jenny Plumer.

EDITORIAL

It is most encouraging that the efforts of Subterranea Britannica are becoming generally recognised. We were delighted to learn that we have been granted £100 from Lloyd's Bank Fund for Independent Archaeologists, administered by the Royal Archaeological Institute, towards equipment to survey the entrances above and below ground at Chaldon and Merstham firestone mines. This award is due particularly to the efforts of our Secretary, Paul Sowan.

DAY CONFERENCE AND ANNUAL GENERAL MEETING, SATURDAY, 16th OCTOBER 1982

Margaret Walker

'Strathaird', Lucy Cavendish College, Cambridge was the venue again for the October Day conference and Annual General Meeting of Subterranea Britannica. The meeting commenced at 10:30 am and Mrs Sylvia Beamon took the Chair. After the various reports had been received, together with the election of the Committee Members for the ensuing year, the meeting continued with the following papers:

Ancient Mining: An interest in Greek and Roman coinage has led Prof. J.F. Healy to his study of Classical winning and mining methods for metals. The Greeks produced metal c.700-800 BC, but there were earlier people who were more proficient at mining by excavating shafts and galleries, for example in the Sudan, from where the earliest map of a gold mine is known c.1250 BC.

Mining and Quarrying for Millstones in the Eifel Region of Germany. Mr Kenneth J. Major is one of the few people who have had opportunity to research or understand the mining techniques of millstones. He explained that the lava of both the west and east Eifel has been used for querns, rubbing stones and millstones from pre-historic times, at least as early as the Hallstatt period (1200-400 BC). The large millstones were roughly dressed in situ, some even from the roof; when prised off these left saucer-like scars in the ceiling.

Tunnels of War: We were glad to welcome back Dave Barnes who showed varied examples of tunnels, from those within forts prepared against invasion by Napoleon to a large newly discovered WWII war-time command station. This latter site is still intact and contains rows of bunks and storage facilities, having escaped vandalism.

All the papers were illustrated by slides, and reports will be published in future bulletins.

Peak District National Park. Stay in a Camping Barn - Losehill Barn only £1.25 a night - just bring lightweight camping kit - no need to carry a tent. Booking form from: Peter Townsend, Peak National Park Study Centre, Losehill Hall, Castleton, Derbyshire S30 2WB. Tel: 0433-20373.

JOHN SCOTT'S GROTTTO, SCOTTS ROAD, WARE, HERTFORDSHIRE

Roger J. Morgan, London Subterranean Survey Association

Ware grotto is perhaps the most complex example of this form of underground folly, popularised by the dwarf hunchback satirist Alexander Pope in religious

Scott's Grotto (continued)

exile at Twickenham. His grotto, constructed 1737-1764 in grotesque parody of a natural cave, and encrusted with shells, spar, flint, mirror and Wookey Hole stalactites, became a cause-celebre, and grotto fever swept the gardens of the landed gentry.

The Quaker maltster Samuel Scott retired to Amwell House in 1740 and his son John went to a private day school near Ware. In 1748 John befriended Charles Frogley*, a bricklayer who shared his interest in poetry, and subsequently married his daughter Sarah Frogley in 1767. She died in child-birth the following year and their baby died some months later, and this may have worsened John Scott's morbid fear of disease which imprisoned him as a recluse at Ware. As his fame as a poet, essayist and social reformer grew London Society was forced to make weekend excursions to him, and he became a firm friend of Dr Johnson. In the mid 1860s he wrote to one of his patrons, a Mr Turner in Exeter, for fossils and shells, and so it is evident that the grotto was started at this time. Johnson shortly afterwards called it "Fairy Hall, none but a poet could have made such a garden". It is assumed that Samuel Scott, assisted by John and Charles Frogley, commenced the construction, leaving them to complete it after his death in 1770. Excavation was complete in 1773, and the lining, never completed, was terminated in 1779 at a reputed total cost of £10,000. Scott had meanwhile risen to the peak of popularity with his poem "Amwell" (1776), and the grotto received a constant stream of visitors who are recorded in a visitor's book. Scott's hypochondria was tragically justified when he fell ill and died on a visit to his second wife in London in 1783. He was mourned by the local people as a great social worker.

The extensive estate was split up into building plots in 1860, Amwell House becoming Ware Grammar School (and now Ware College of Further Education), and a house called "The Grotto" was constructed nearby by Sir John Hanbury. This house was in turn sold for redevelopment in the 1960s, and a bitter controversy, involving local and national societies, developed over the fate of the grotto which, during the protracted planning appeals, was unprotected and heavily vandalised. Eventually saved and now in possession of East Hertfordshire District Council, this damage has been stabilised but not reinstated.

As originally conceived the grotto, reached by descending fern-draped paths, was dug into the side of a steep chalk knoll, on the summit of which extensive views of Ware and district could be enjoyed from a Gothic gazebo. A fore-building, with porch (now demolished) led to a central tunnel terminating in a domed chamber, the "Consultation Room". From the back of a seat recess, a tunnel much too small to enter gives tantalising glimpses of further, unreach-able, rooms. These are accessed by emerging and re-entering by a side door to the left, which leads down into the hill to a cross-roads. On the left are the circular "Refreshment Room" and square "Committee Room No 2", on the right a fork to the "Committee Room" and the "Robing Room", both circular, domed and penetrated on the central axis by a light and air shaft which runs up to the "Consultation Room". A further long passage leads back up the other side of the complex to the largest room, the "Council Chamber", with six wall seats and top lighting, and exits via a door on the right of the porch.

The most extraordinary feature of the design is the light and ventilation pipes driven through and between the rooms, providing "short-cut glimpses". As can be seen from the plan, the full lining to the walls, floor and doors of flint, shell and mirror in elaborate patterns was only half completed, the bare render of the inner chambers being enlivened with simple patterns of oyster shells or coal. Some of the lining appears to come from far-flung parts of the world such as the South Seas. The "Robing Room", which once apparently had a central pillar with radiating ribs in the manner of a Gothic chapter house, is about 67 ft (20.4 m) into the hill and 34 ft (10.4 m) below the surface.

Scott's Grotto Cont'd

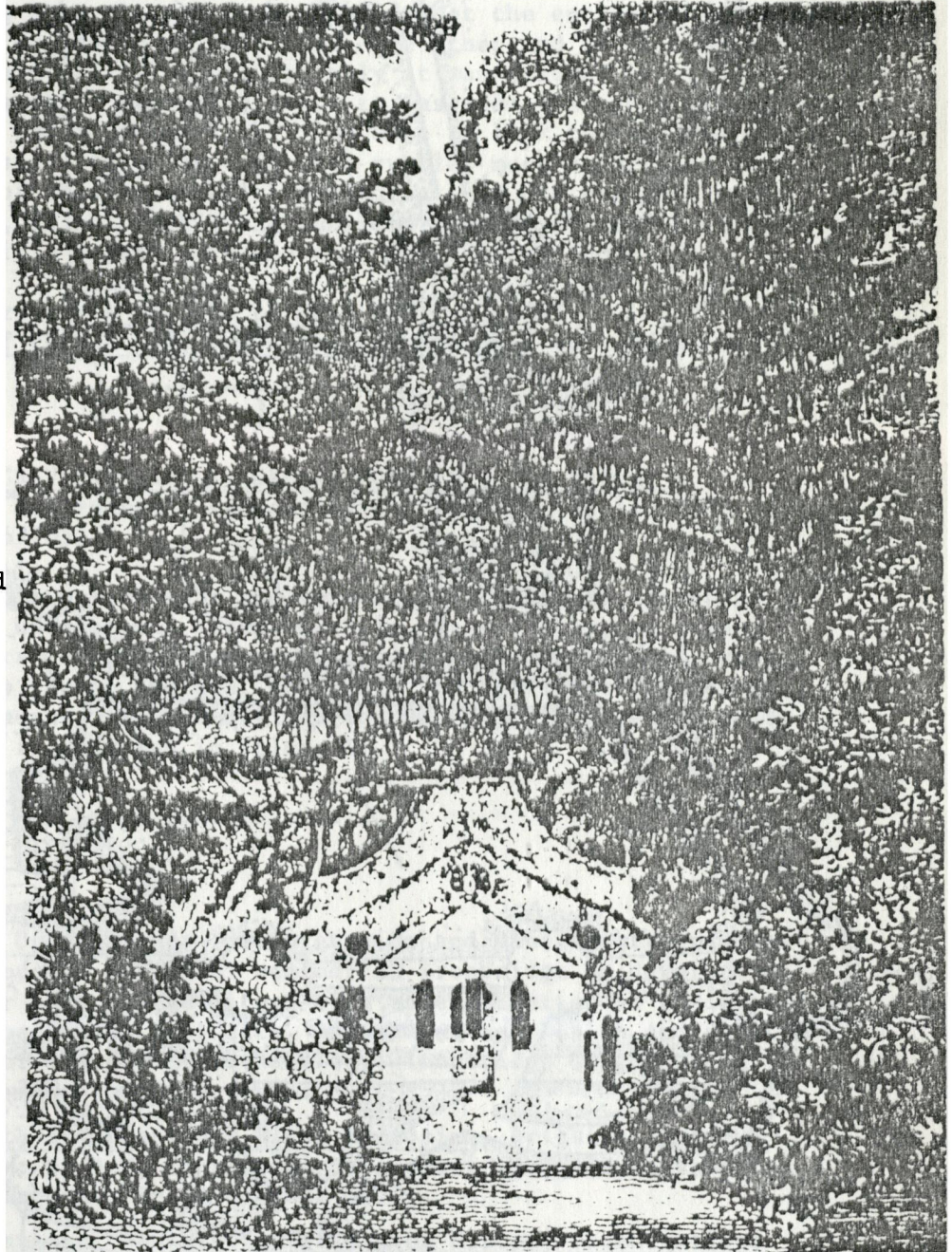
Although clearly intended to be in the early grotto tradition of awful whimsy, the unfinished grimness of the inner depths marks a transition to the more psychotic and furtive moleing of later tunnellers such as Joseph Williamson under Liverpool, the Duke of Portland under Welbeck, and Whittacker Wright under Lea Park and lake.

References:

- HEATH, C. The Book of Ware, Portrait of the Town. Barracuda Books Ltd. 1977.
East Herts District Council Information Sheet, 1980.

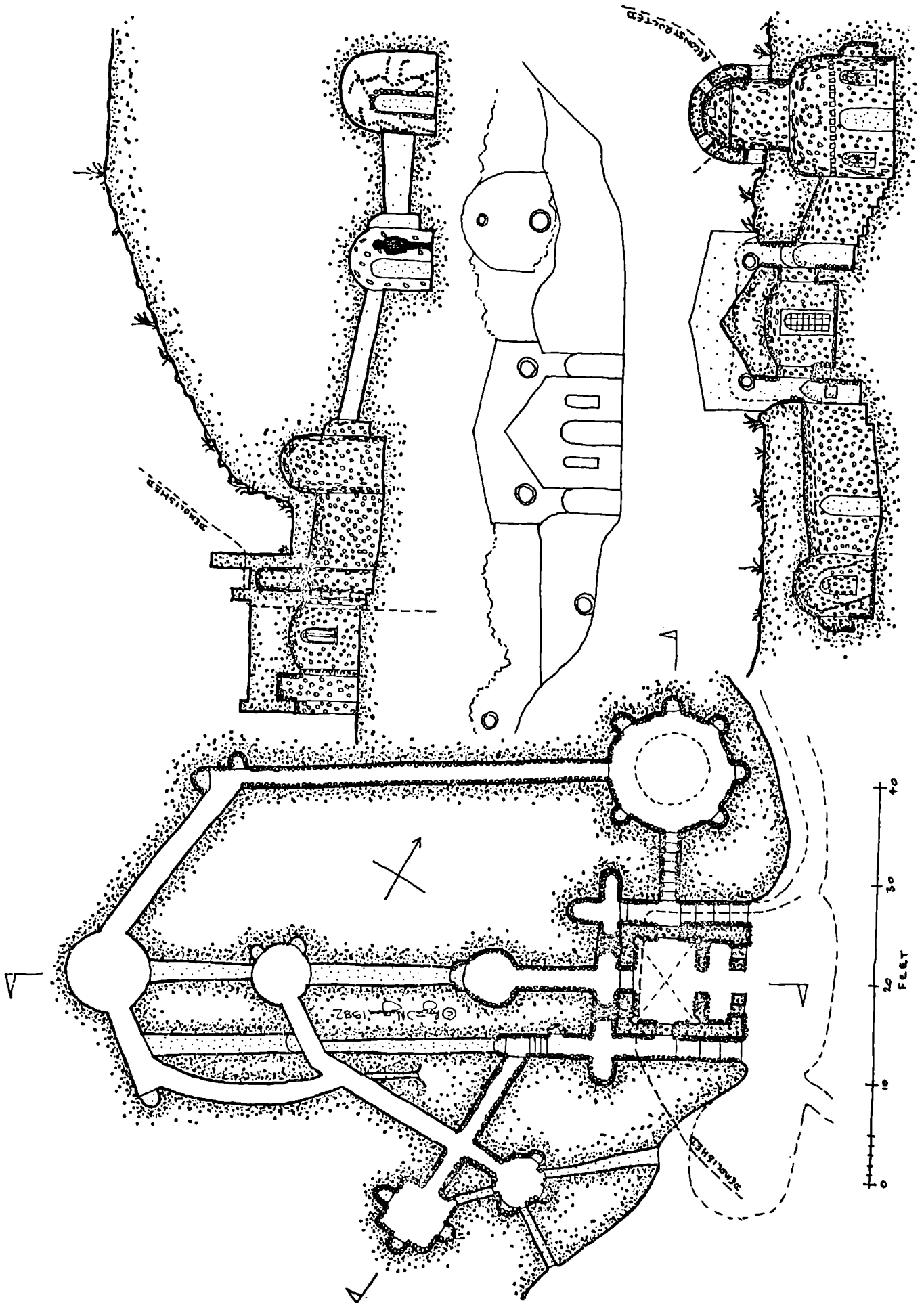
Scott's Grotto was first opened to the public by the East Herts District Council for two hours during Ware week 1979. About 700 people formed a queue but because the exit was bricked up, those who were able to enter had to leave by the entrance. As a result the majority were disappointed. Amongst them was a local resident, W. G. Thomas, who volunteered to act as honorary attendant and from the 27th October, 1979 the grotto has been open on Thursdays and Saturdays 2 - 4 p.m. all the year round: Other times by appointment.
Tel: WARE 66135.

W. G. Thomas (Tom)
29 Warner Road,
Ware, SG12 9JL.



Entrance to Scott's Grotto, Ware (circa 1808)

* N.B. In some accounts the name appears as Foggerty. The Ware Public Library are unable to confirm or deny which is correct.



JAN SCOTT'S GROTTA, WARE

Brief Communication

ST MARY'S ABBEY TUNNEL, WEST MALLING

(The Abbey is at NGR TQ 683575)

John Vigar

The Benedictine Abbey of St Mary, West Malling, was founded in 1090 by Bishop Gundulf. In the Records of the Chelsea Speleological Society there is a mention of an underground feature. I have recently visited the Abbey, by kind permission of the Mother Abbess. The underground structure lies below a 2-3 ft (0.6-0.9 m) cover of soil at the boundary of the landscaped grounds.

A flight of stone steps lead through an arched entrance to the "tunnel". It is about 12 ft (3.5 m) long, 4 ft (1.25 m) wide, and 6 ft (1.75 m) high. The walls are of mortared ragstone and the floor appears to be natural or of compressed soil as probing did not disclose any artificial materials. It gives the appearance of having been altered or broken into at the entrance, as there is an unsightly end to the fabric of the roof. The other end is sealed in a similar manner to the main walls. Until recently it was assumed the tunnel continued on the other side of the wall, since it was seen that some stones had been removed at the top of the wall. I was able to look through the wall, and see that the other side was piled high with rubble, much compressed, and that there was no sign of the stone walls continuing. It did not look possible to explore further, as the rubble had subsided to within a few feet of the surface, and there is a modern path and wall immediately above.

References: Anthony Cronk - A History of West Malling, 1951
Records of the Chelsea Speleological Society, vol. 6, p. 98

Book Review

R.J. Mercer: GRIMES GRAVES, NORFOLK. EXCAVATIONS 1971-72: Volume I
Department of the Environment: Archaeological Reports, No 11, 1981
£14.00 ISBN 0 11 671055 1

As is to be expected, this report sets the very high standard of investigation of mines and other underground sites which is, regrettably, so rarely approached. The chapters in Volume I cover Excavation, Neolithic and Bronze Age Pottery, Other Finds, Human Skeletal Material, The Agricultural Economy, Sub-Fossil Land-Snail Faunas, and Summary and Conclusions. A detailed study of the flint assemblage is promised in Volume II.

P.W. Sowan

DATES FOR YOUR DIARY

5 March 1983 - Heritage Underground: Interpretation and Management for Caves and Mining Museums. Proposed practical seminar at Ironbridge on development and policy decisions for underground sites, with an examination of their tourist potential, and approaches to publicity, management and health and safety. Contact: The Institute of Industrial Archaeology, Ironbridge Gorge Museum, Telford, Shropshire TF8 7AW.

10-15 April 1983 - Fourth International Flint Symposium, Brighton, Sussex. Further information from: Dr R.N. Mortimore, Department of Civil Engineering, Cockcroft Building, Moulscroomb, Brighton, NR2 4GJ.

10-13 June 1983 - The National Association of Mining History Organisations (NAMHO) Conference, 1983 is to be held at the Leeds Industrial Museum between Friday 10th June and Monday 13th June 1983. The event will consist of short illustrated lectures dealing with a wide range of subjects related to the coal, fluorspar and metal mining industries. There will be historical and general interest displays with an underground and surface trip included over the week-

end. I hope this is sufficient information to whet the appetite of all members. Any further information may be obtained from R.E. Hewer, 36 Benomley Crescent, Almondsbury, Huddersfield HD5 8LU, Yorkshire. Please enclose S.A.E. Booking forms and further details will be issued at a later date.

THE HEZEKIAH TUNNEL, KIDRON VALLEY, ISRAEL

Valerie Bannister

About 3,000 years ago, King David led the capture of the Jebusite city at Jerusalem through a conduit.

The walled city occupied the lower slopes of the Kidron (Qidron) valley, just south of modern Jerusalem, its situation being determined by the flow of the Gihon spring, the greatest in the Judean mountain range, with an output today of 50 cu m per hour. A shaft, approached by 30 steps wide enough for two water-carriers to pass, was revealed by Warren's excavations in 1867 linked to a 20 m tunnel bringing the water supply within the safety of the city walls, the ruins of which are still extant.

After its capture, King David and his successors re-fortified the area and, when Sennacherib threatened to beseige it, a later descendant, King Hezekiah (727-698 B.C.E.), ordered the rapid cutting of a far longer tunnel to bring water within the new city walls (also still partially standing). This had a well-concealed and protected entrance and exit, to avoid a repeat of the incursion made by his ancestor.

"This same Hezekiah also stopped the upper watercourse of Gihon, and brought it straight down the west side of the city of David." (Chron. II, XXXII 30)

Today the spring emerges 12 m below the present road level (450 m SW of Absalom's Monument), from a niche between porous limestone and a layer of impervious rock; although slightly variable, as it is fed by a network of hidden sources, the flow is considerable throughout the entire year.

The tunnel starts from this point and follows a winding course of 533 m (to cover a distance of 320 m) to the Pool of Siloam (Shiloah). The course follows the route of a natural fissure and comparatively easily worked rock, work having been started from both ends. Chisel marks show the direction of work, and an erratic series of zig-zags and three "false" turns of 1-2 m demonstrate abortive attempts by workmen trying to meet up, guided by sound. There are a number of narrow triangular niches set about 1.5 m up in the wall, probably used for lamps during construction, and smoke-stained from more recent use. It is probable that they met at slightly differing levels, as the height of the lower section is excessive, possibly indicating a lowering of the floor level; doubt has been thrown on this as part of the ceiling is not man-hewn ("... for there was a split in the rock ..."), but the chisel marks certainly go up to almost 3 m.

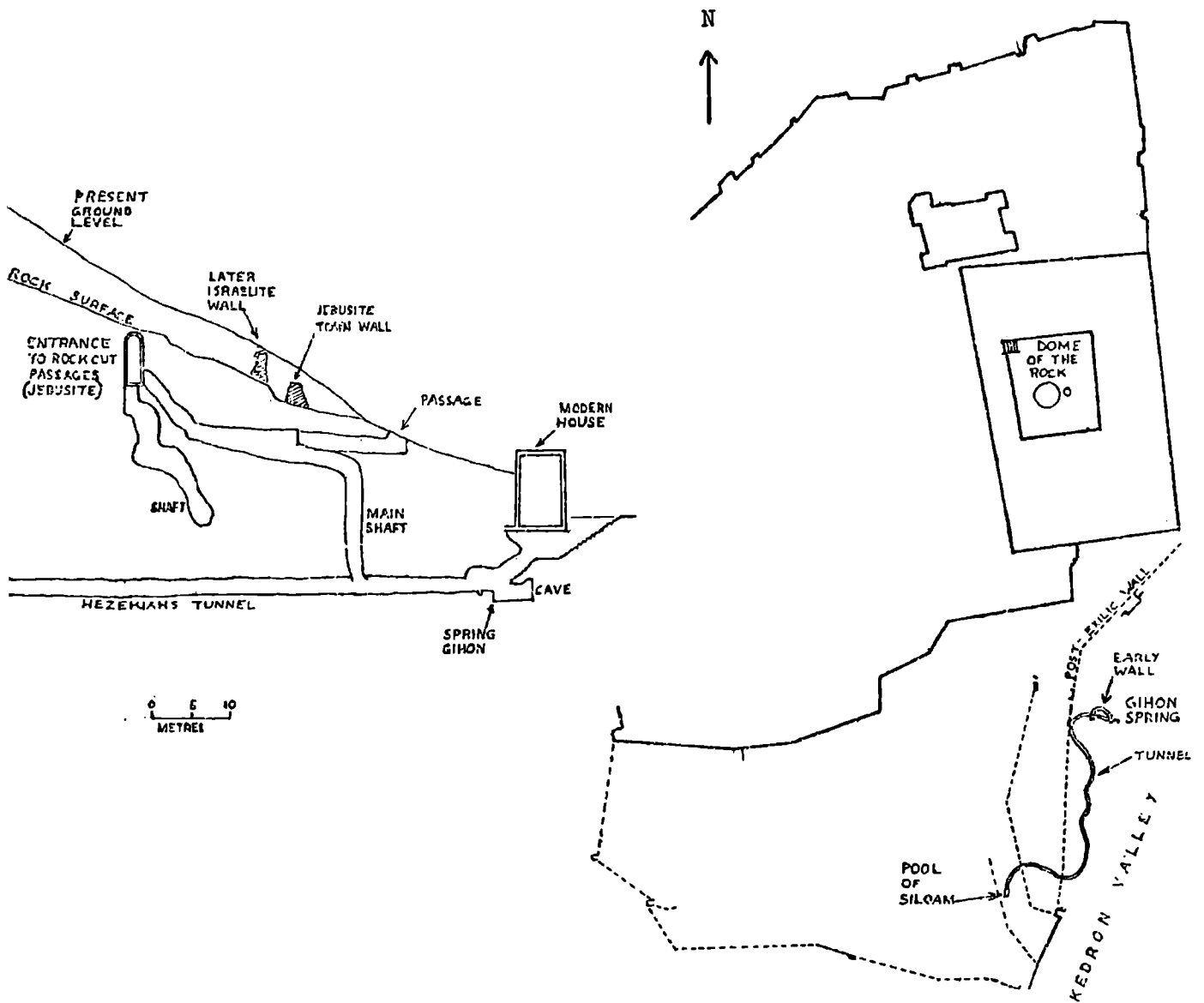
This evidence was supported with the discovery by Schick in 1880 of a Hebrew inscription: "This is the story of the boring through: whilst [the tunnellers lifted] the pick each towards his fellow and whilst three cubits [yet remained] to be bored [through, there was heard] the voice of a man calling his fellow, for there was a split in the rock on the right hand and on [the left hand]. And on the day of the boring through, the tunnellers struck, each in the direction of his fellows, pick against pick. And the water started to flow from the source to the pool, twelve hundred cubits. A hundred cubits was the height of the rock above the head of the tunnellers".

The dimensions from source to pool are 533 m long, 1.1-3.4 m high, 0.58-0.65 m wide, a maximum depth below hilltop of 52 m, and a gradient of 2.18 m (4%).

The Hezekiah Tunnel (Cont'd)

References:

- FODER, E. Israel. Hodder and Stoughton, 1979.
- KENYON, M. K. Digging Up Jerusalem. London: Book Club Associates by arrangement with Ernest Benn Ltd. 1975.
- MENASHE Har-el Jerusalem. Jerusalem: Cannan Publishing House, 1977.



After Kenyon.

0 100 200 300 400 500
METRES

PA

**DETAILS OF UNDERGROUND STRUCTURE
FOUND AT TOWN FARM, WHADDON, CAMBS.
OWNED BY CAMBRIDGESHIRE COUNTY COUNCIL:
TENANT FARMER, H. K. L. GREEN, 5/6/1981.**

Members of Subterranea Britannica examined the structure.

NOTES: O.S. TL 349 465

It was discovered when half of a flagstone across a hole fell in after heavy rainfall, beneath the farm yard.

Mr. Green has been the farmer here since 1940 and no-one locally has any memories of the use of this underground structure.

CONSTRUCTION:

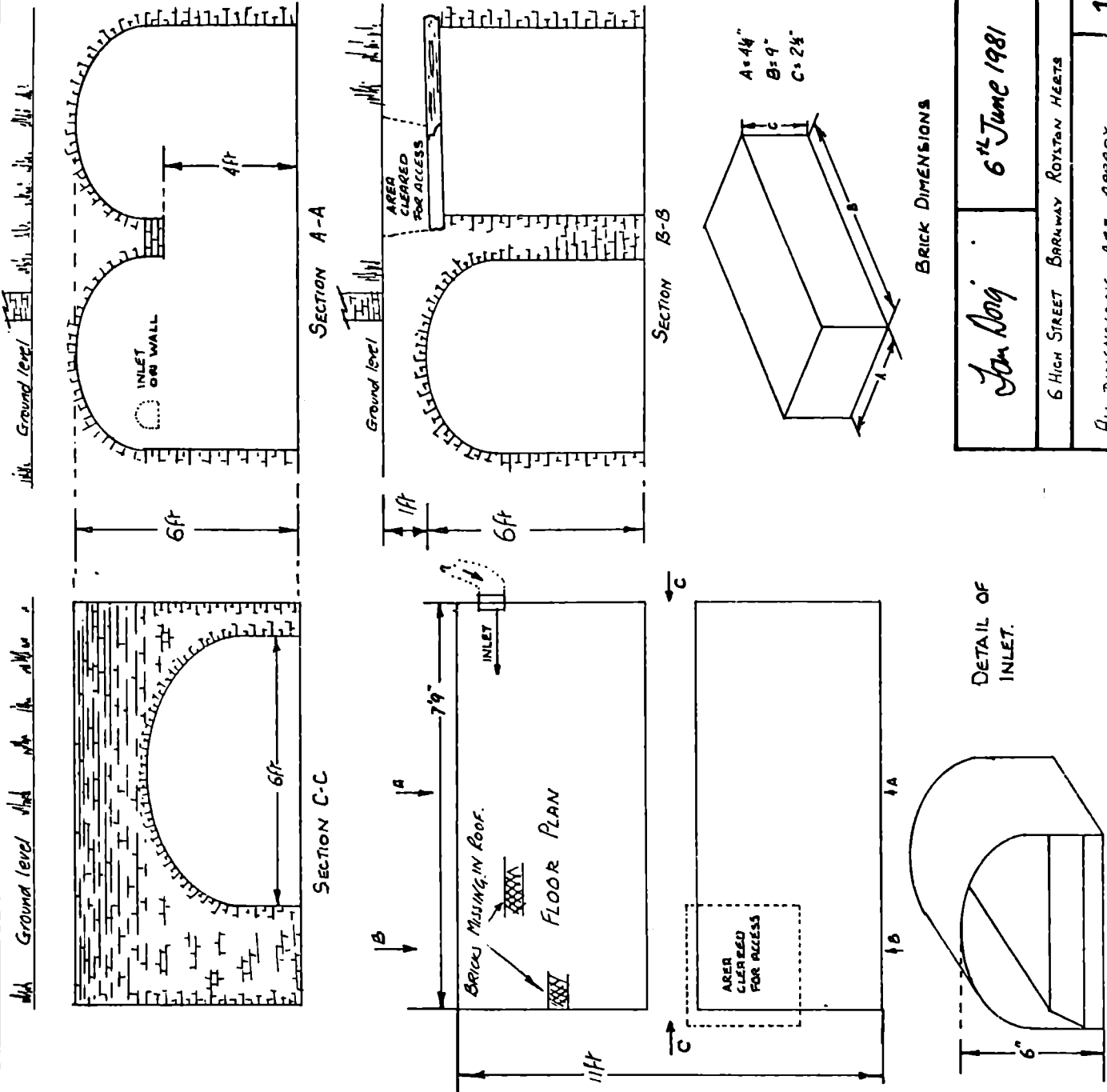
Late 19th or early 20th Century brick. Concrete (?) floor - no joints, no evidence of drainage. Difficult to discern - thick slurry.

Vaulting has been rendered in places.

CONCLUSION:

Undoubtedly a liquid manure tank as illustrated in Henry STEPHENS The Book of the Farm Vol: I, 1821 pp. 176, 366 and 369

(Tom and Ann Dolg, and Sylvia P. Beamon)



Tom Dolg
6th June 1981
6 HIGH STREET BARKWAY ROYSTON HERTS
ALL DIMENSIONS ARE APPROX

FARM MANURE SLURRY PIT, WHADDON, CAMBRIDGE.

Tom Doig

Whaddon is a small village lying some 4 miles north of Royston (Herts) just east of the A14 road. Town Farm, whose tenant farmer is Mr H.K.L. Green, is situated in the main high street of the village.

Subterranea Britannica was called in during June 1981 to investigate an underground structure, discovered when the ground subsided under the wheel of a potato trailer.

The stormy weather had caused the ground to become soft and incapable of supporting a load; the area which collapsed proved to have been an access shaft. The farmer cleared the shaft and pumped the water from the chamber leaving a depth of 2 ft (0.6 m) remaining. A ladder was lowered into the cavity and detailed measurements were then possible. The interior proved, in fact, to have two barrel-vaulted chambers (see the attached diagram) similar to the liquid manure tank described in Henry Stephens' The Book of the Farm.

A tank of this nature would have been pumped out about three times per year depending on the number of animals kept in the farmyard. The manure would have been transferred to a wheeled barrel for distribution on the fields, thereby ensuring that the full ecological nitrogen cycle be maintained - an early form of resource conservation.

The quality of the manure was sustained by the lack of dilution, the rain water being diverted by gutters into an alternative reservoir.

A report of the investigation can be found in Farmer's Weekly for July 31st 1981, entitled "Riddle of the Vaults" by Edward Long.

DUDLEY TUNNEL AND LIMESTONE WORKINGS OF THE BLACK COUNTRY

Martin Guest

Limestone mining began in the Black Country two centuries ago and was centred under and around the town of Dudley. The limestone was obtained mainly to supply the iron industry of the Midlands but some was also burnt in kilns to produce lime for agricultural and building purposes. The stone was mined from both the thin (upper) and thick (lower) beds of Wenlock Limestone, which outcropped at both Castle Hill and Wrens Nest Hill, Dudley, and continued across the Black Country with other workings at Mons Hill and Walsall.

The first limestone mined was at Castle Hill on the estates of John, 2nd Lord Viscount Dudley and Ward, and he built a 755 yard (689 m) branch canal, known as Lord Ward's Canal, to serve his mine and kilns. This included a 226 yard (206.6 m) tunnel, completed in 1778, which terminated in the underground workings in the thick bed. On completion a notice appeared in Aris's Birmingham Gazette to promote trade:

"The Public may now be supplied with any Quantity of VERY GOOD LIMESTONE, to be delivered into their Boats at Four Shillings per Ton; or upon proper Notice may have their Boats loaded with Lime upon the most reasonable Terms."

These workings were later opened out to the surface to form Castle Mill Basin. The tunnel passed through the thin bed of limestone before reaching Castle Mill Basin and subsequently this bed was also worked and again the area around

Dudley Tunnel (continued)

the canal was opened out to the surface forming Shirts Mill Basin. The rock face separating the two basins is an enormous coral reef which is of great interest to geologists and the area has now been designated a Site of Special Scientific Interest.

The next stage was to extend Lord Ward's Canal by driving a tunnel (the main Dudley Tunnel) from Castle Mill Basin, through the ridge straddled by the town of Dudley, to gain access to the south (River Severn and London via Thames and Severn Canal). This, however, proved to be very difficult but the tunnel was finally completed in 1792 after seven years struggling. The tunnel was just over 1½ miles (2.4 km) long (132 chains in fact) and nominally 8 feet (2.44 m) wide with no towpath.

The tunnel was built using the technique established by Brindley at Harecastle about 20 years earlier. A straight line was surveyed across the hill and about a dozen constructional "pits" were sunk at about 10 chain intervals, down to the level of the intended tunnel. Headings were then driven outwards from the bottom of the shafts, the centre of the tunnel and the level being taken from the ends of two vertical lines. The separate headings then hopefully met to form one continuous tunnel but at Dudley, as in other early tunnels, inaccurate surveys meant corrections were necessary midway between shafts. In fact, where the tunnel encountered a very hard basalt intrusion the two headings were out of alignment by more than "half a hole" and a pronounced "kink" resulted which prevents one from seeing right through the tunnel, although one can see both ends of the tunnel from the middle.

Shortly after leaving Castle Mill Basin the tunnel passes through Castle Hill fault and then passes through the thick and thin beds of Wenlock Limestone again. When the tunnel was cut as far as the thick bed, quarrying began and a vast open pit was excavated, comparable in size with Castle Mill Basin. Then, as the working face retreated, a branch canal was built along the strike of the limestone and the junction with the main tunnel was roofed by a vast groined vault, known as "Cathedral Arch", to prevent rocks from falling into the canal; this brickwork was covered with several feet of spoil. This is thus an early example of the "cut and cover" method of tunnelling. The branch canal eventually penetrated 418 yards (381.5 m) into the mine; other branches were built to connect with thin-bed workings and also back through Castle Mill fault, further along the hill, into the thick-bed workings. The limestone was removed leaving huge caverns with massive pillars left in to support the roof, which consisted of a hard band of limestone about 18" (0.46 m) thick.

The last section of the underground system to be built was the Wren's Nest Tunnel, which was started about 1805 as accessible deposits of limestone on Castle Hill were becoming worked out. This branch led to a cavernous underground basin at the East Mine of Wrens Nest Hill 785 yards (716.7 m) from Castle Mill Basin and was extended 400 yards (365 m) to an even larger basin at the West Mine about 1815.

East Basin could hold nine narrow boats and West Basin sixteen. East Mine was different to the rest of the Dudley mines in that the limestone beds dip at a steep angle, making the pillars almost horizontal.

West Mine was the most impressive of the mines - the bed of limestone lying at about 60° to the horizontal was worked out to the surface, a vertical distance of about 250 feet (76 m), where it was known as the Seven Sisters Cavern after the seven pillars across the entrance.

Although mining was coming to an end on Castle Hill by the early 1800s, the resourceful Earl of Dudley soon realised money could be made by opening the

Dudley Tunnel (continued)

mines to the public. Consequently, gas-flare lighting was installed and miners were employed to inspect the pillars in the caverns each day and fit wooden blocks where cracking occurred. A bandstand was constructed in the heart of the main cavern and there are many stories of parties of thousands of people being entertained at one time.

One such party is recounted in the Illustrated London News when the Dudley Mines were visited by the British Association for the Advancement of Science. The outing took place on Saturday September 15th 1849 and was part of a programme of events organised for the Annual Meeting of the Association which that year took place in Birmingham:

"The Dudley Cavern seekers went to their destination by canal boats of which five were engaged to transport such of the members of the Association as liked that mode of proceeding, but many went by other conveyances and as great numbers of tickets had been issued to the residents of Dudley and vicinity, the throng of visitors to the caverns was immense; according to some computations nearly 15,000 persons availing themselves of the privilege during the day. The members of the Association were received near the caverns by members of the local Committee, by whom they were directed to the point of entrance, a romantic spot, enshrouded by trees, where hundreds of persons were waiting their turn of admission. Going down a few steps, the visitors passed under a great arch excavated in the rock, and, following the track were soon in the interior of the caverns. These enormous caverns are not natural formations, but have been produced by the continued excavation of the limestone of which immense quantities are used in the neighbourhood, and sent to various parts of the kingdom. The length of the caverns is very great, and, as may be inferred, midnight darkness reigns ordinarily throughout their recesses; but on this occasion the caves were illuminated at the expense of their noble owner, Lord Ward. The effect was most singularly beautiful; for as far as the eye could reach were rows of candles which shed their tiny light upon the scene; and at the extreme end of the caves the candles were arranged so as to give the appearance of a temple. A short distance from the entrance the reflection of the candles in the canal which passes through part of the caverns was extremely singular, a continually flickering light being the only appearance produced; and it was not till the eye was accustomed to the darkness of the place that the water could be distinguished. It was originally intended to have shown the mode of blasting the limestone rock, but from the circumstance that the heat from so many candles and the great number of persons present, drew a current of air towards the caves so that had the blast taken effect, the smoke and sulphurous vapour therefrom would have been exceedingly unpleasant to the crowds near the entrance.

"The effect of the scene in the caverns was superb in the extreme. When accustomed to the gloom that prevailed, the eye could distinguish the picturesque forms of the rock and the huge pillars left to support the superincumbent masses of rock overhead; for it was curious to notice how little effect the thousands of candles had in dispelling the absolute darkness of the place. We should that the visitors did not go (sic) to the extreme end of the caverns; and at the point where they turned off to reach the entrance by another pathway, Sir R. Murchison delivered a brief lecture on the character of the rocks of the Dudley formation. Sir Roderick himself was the observed of all observers, not only in the caverns but out of them; for the high-crowned green hat of an inhabitant of the Tyrol, and a shepherd's plaid scarf, rendering his costume picturesque and striking. On the conclusion of Sir Roderick's speech, which he uttered through a speaking trumpet, the French Ambassador M. Drouin de l'Huys, made a brief and pithy address; after which repeated cheers were given for Sir Roderick, the Ambassador, Lord

Dudley Tunnel (continued)

Ward, his agent Mr Smith & Co making the caves resound again and again.

"At a signal from Mr Smith, red and blue fires were lighted at various parts of the caverns, the effect of which was striking and magnificent in the extreme, and drew forth shouts of admiration from the crowds who thronged the caves: and as each successive blaze revealed the extent and form of the place, lighting up the projections and angles of the rocks, scores of indescribable grandeur were produced. The visitors who had arrived earliest at the caverns then retired, to make room for others who could not till then enter; and all strove to get into the fresh air from the sulphurous vapours arising from the burning of the coloured fires. Hundreds however remained, locked up as it were, for an hour or two, without being able in any way to help themselves; this promised at one time to be attended with rather unpleasant consequences but ultimately the whole party effected an exit without accident or injury of any kind. The fault was in issuing orders for the admission of so large a number of persons at the same time".

Mining ceased altogether in the 1920s and during the 1930s Dudley Zoo was set up on Castle Hill and several of the quarries were used as enclosures for lions and bears, etc. The quarries which extended underground were ideal for the bears for hibernation but no one thought to seal them off from the rest of the system until a few bears were suddenly found roaming round the neighbouring village of Gornal.

Later, during the War, parts of the system were converted for munitions storage. The remains of one conversion made for B.S.A. can still be seen in the Zoo grounds and in fact we still have several members in the Dudley Canal Trust who were involved in the building of this store. Although agreements have now been made with the Zoo owners regarding access, early visits were clandestine, under cover of darkness and invariably involved close encounters with wild boars or bison. The quiet approach was then further destroyed while trying to negotiate the heap of dead parrot cages and barbed wire entanglements cluttering up the entrance, by the awakening of the flamingoes, etc., closely followed by the rest of the Zoo inmates.

Unfortunately most of the Wrens Nest system was infilled during 1972/3 as it was becoming increasingly unsafe due to pillars "wasting" but most of the workings of Castle Hill are still accessible and only subject to natural deterioration.

Last winter has seen quite a lot of deterioration on Castle Hill - in November a 50 ft (45.7 m) wide and 50 ft (45.7 m) deep crater appeared in one of the paths over the hill and was promptly filled by the local council (with hard-core) and just the last month or so we have a slow run-in to Hurst's Cavern on the main line of the Dudley tunnel. A visit to the remains of the Wrens Nest caverns nowadays is guaranteed to provide a real live roof-fall before your very eyes, but even though three-quarters of the caverns have gone the remainder is still most impressive.

In 1962 Dudley Tunnel was threatened with closure and with being culverted to form a railway embankment, but the Dudley Canal Tunnel Preservation Society was formed to fight to keep the tunnel open. The tunnel was officially abandoned but the DCTPS managed to keep it open by running boat trips and eventually in 1973 it was reopened officially. The DCTPS was reformed into the Dudley Canal Trust, who have maintained the tunnel ever since and operate tunnel trips. In the early days before 1973 trips were run in a succession of old leaky wooden narrow-boats but after that an iron narrow boat was obtained.

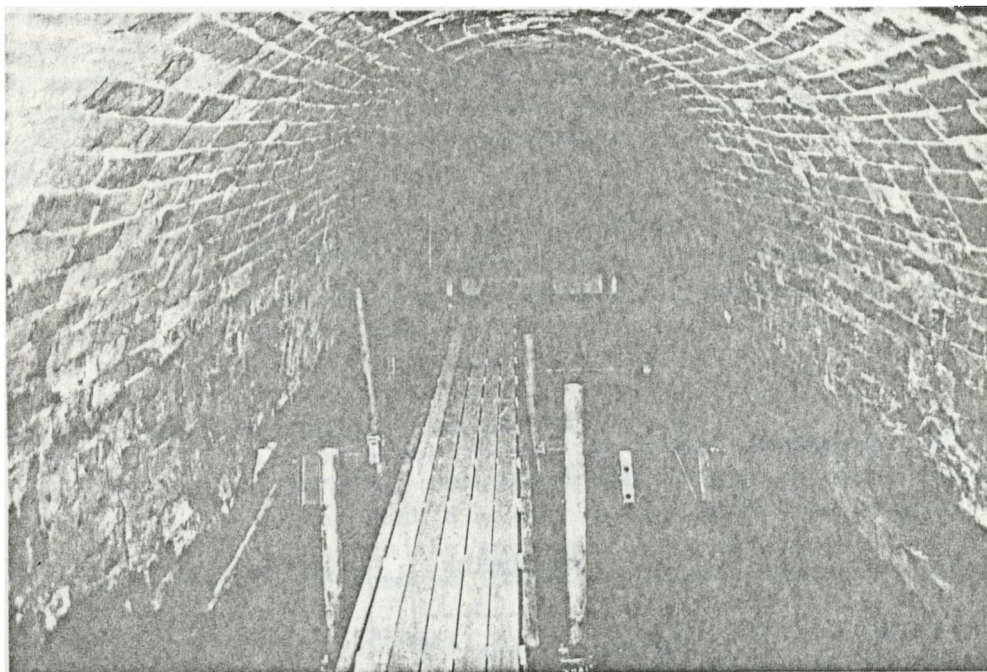
In 1975 the old iron boat was converted to electric propulsion and lighting -
(continued on page 16)

References for Dudley, Walsall and other Limestone Mines

- BROWN, Ian A background guide to Newbigging limestone mine, Fife. Bull. Grampian Speleological Group, second series, 3(1), 54 - 62. 1980.
- BROWN, Ivor J. Underground in the Ironbridge Gorge. Industrial Archaeology Review 3 (2), 158 - 169. 1979.
- BROWN, Ivor J. An Interim Report on the Lincoln Hill limestone mines near Ironbridge, Shropshire. Account No. 13, Shropshire Caving and Mining Club : 20 pp. 1981.
- DODDS, P. W. & JONES, R. W. Dudley Tunnel. Dudley Canal Trust : 28 pp. 1977. (An earlier edition, of 1965 or 1973, contains an article by J. Ian Langford on the Building of the Dudley Canal Tunnel, in pages 4 - 13).
- DOWSWELL, P. The Lime Industry in Dumfriesshire - a brief account. Bull. Grampian Speleological Group, second series, 3(1), 22-26. 1980.
- GREEN, H. E. The Limestone Mines of Walsall. Black Country Society : 46 pp plus folding plan. 1977.
- GUEST, M. Dudley Tunnel and Limestone Workings of the Black Country. Newsl. Northern Mine Research Society, May 1980, 3-4. 1980
- ROBERTS, P. K. Canal Tunnels associated with Mineral Exploitation. Industrial Archaeology Review 5(1), 5 - 14. 1981.
- WARWICK, G. T. Economic History in Wren's Nest National Nature Reserve, Nature Conservancy Council, pp. 12 - 20. 1967.

Dudley Canal
Tunnel.

Photographer:
Martin Guest.



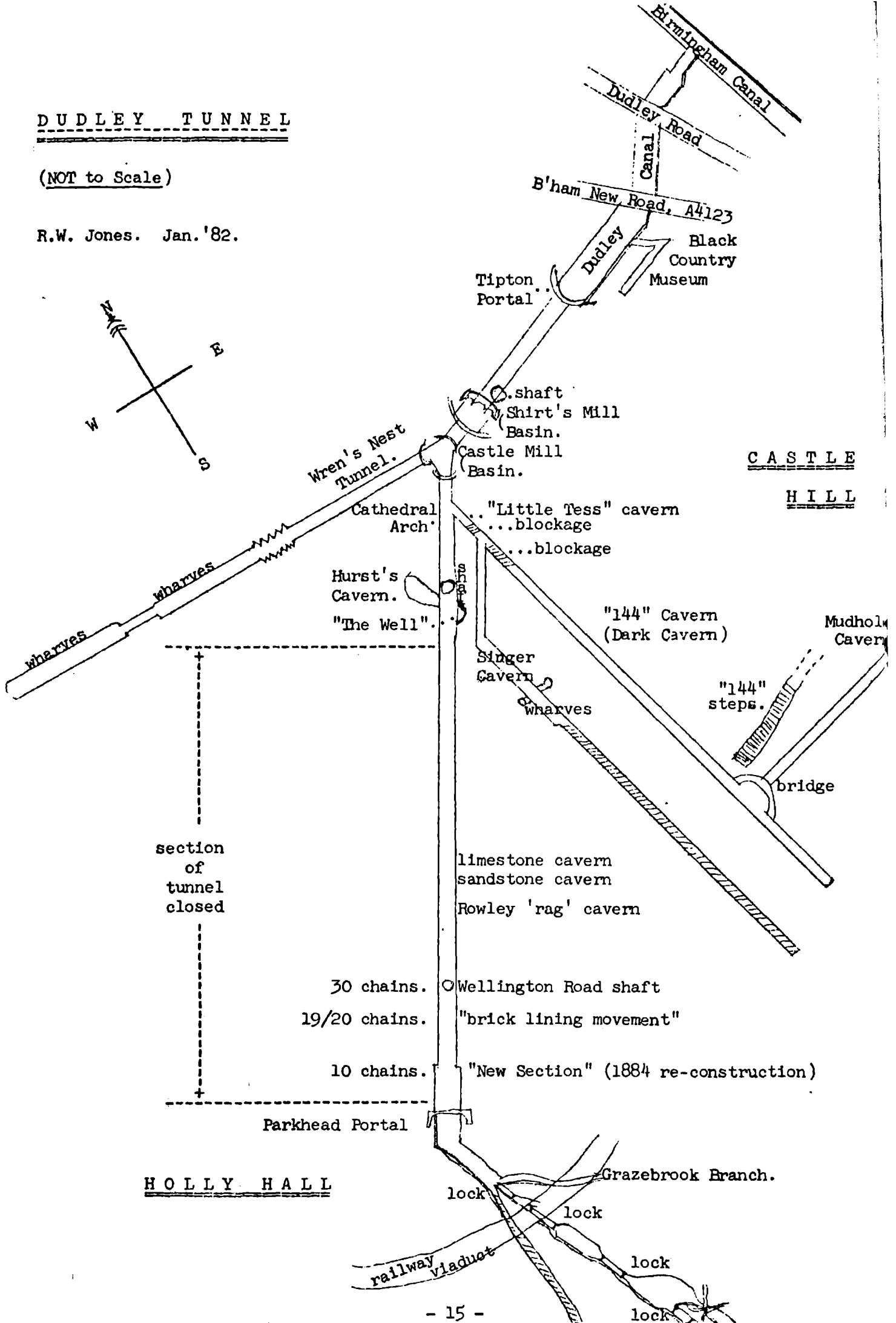
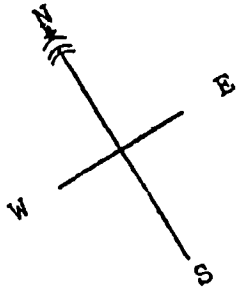
DATE FOR YOUR DIARY

24 - 26 JUNE, 1983. Dudley area Study Weekend. Book early to ensure a place. S.A.E. to Margaret and Martin Guest, 35A Victoria Road, Fallings Park, Wolverhampton, WV10 ONG for further details.

DUDLEY TUNNEL

(NOT to Scale)

R.W. Jones. Jan. '82.



Dudley Tunnel (continued)

until then trips were always legged through by the feeble glow of a few half dead Tilley lamps. In 1981 a brand new boat was built for running tunnel trips - this was named "George" after the original tunnel tug, and is a double ended boat i.e. with a motor at each end; this year the old iron boat "Electra" has been rebuilt and refitted. Unfortunately the main part of the tunnel was closed in November 1981 pending investigation and repairs by British Waterways Board after a passing boater complained about the state of the brickwork in a well-worn section of the tunnel. So the DCT faces another crisis, but hopefully the tunnel will live through it again and trips will be resumed.

At present the workings of Castle Hill are freely accessible (in fact the DCT obtains stone for repair work from the mines by boat) but are deteriorating rapidly. If anyone would like more information on the mines I may be able to help, so please contact me: Martin Guest, 35a Victoria Road, Fallings Park, Wolverhampton WV10 ONG.

For any cave divers: mining was also carried out at a level about 100 feet (91.4 m) below the canal but these workings are now all flooded to canal level and little is known of them.

(With thanks to the Northern Mine Research Society for permission to reprint a large portion of this article from their Newsletter of May 1980)

UNDERGROUND CHALK WORKINGS AT GREAT CORNARD, NEAR SUDBURY, SUFFOLK

Paul W. Sowan

A report in The Times of 22 May 1980 informed readers that "A school was closed yesterday and its 274 pupils sent home after it was reported that a tunnel ran under the building and its playing field. The Residents' Association at Great Cornard, near Sudbury, Suffolk, has called on ... [the] Secretary of State for the Environment, to order a public enquiry. It says that a tunnel extended at least 100 ft under the grounds of the village primary school ending in an underground 'cave' which was about 13 ft wide ... Mr Joe Alban, a former clerk of works at a Greater London Council housing development near the school, said yesterday that the surrounding land was 'riddled with holes'. He maintained that he told the chairman of the local district council in 1977 that there was a tunnel below the school playing field. 'I was so worried I also went to see my MP and the county councillor for the area. The only result was a statement from Suffolk County Council to the effect there was nothing to worry about.' He said he repeated his warning last week and pinpointed the mouth of a chalk tunnel. The County Council ordered workmen to board up the tunnel entrance and promised soil tests in the area ... Then the tunnel was broken into ... the assistant county architect said ... 'When a hole appeared near the school about a fortnight ago we sealed it off and decided to carry out a series of probes along the school perimeter. We had absolutely no evidence at that stage to suggest the cavity extended under the school ... On Tuesday we learnt that a member of the public had broken in and crawled about some distance beneath the surface. As a result of his report we had no alternative but to recommend immediate closure of the school.'"

A report compiled for Suffolk County Council by Sir William Halcrow and Partners has now been produced, in which the examination and filling of the Great Cornard workings are described, and Subterranea Britannica is grateful to the Deputy County Architect for a copy of this. The report of investigations deals almost exclusively with geophysical and direct examination of the Pot Kiln Primary School site, and hardly at all with the geological context or

Great Cornard Chalk Workings (continued)

with historical records. The accompanying plan shows the school to be sited immediately to the west of an open pit or quarry, and it seems likely that this openwork had at some time been extended across an area formerly undermined by the chalk workings - about a dozen lengths of tunnel were discovered in all, most of them lacking physical interconnections but truncated on the west by the openwork.

Previous investigations in the area at nearby Maldon Court in 1977, "which stands on the edge of the same quarry outcrop as the Pot Kiln Primary School", had been concerned with a fractured water main and a large washed-out cavity. Site investigation revealed four tunnels from 2.5 m to 5.0 m high, 2.0 m to 3.5 m wide, and 5.0 m to 40.0 m long. The total volume of c. 620 m³ was understood to have been filled with PFA/cement grouting, via four large diameter boreholes. In May 1980 a hole was exposed in the cliff face below the perimeter of the school in the course of pumping out water from the school swimming pool - an accurate survey revealed a length of 35 m of tunnel closely resembling that found earlier at Maldon Court.

Details are given of site investigation by penetrometer, radar scanning, resistivity survey, seismic survey and infra-red methods. The penetrometer and seismic methods proved most effective. Radar scanning was "totally ineffective on account of the consistency and dampness of the ground", and the resistivity survey was useless because of the "echoes caused by the voids being too close together, making positive identification difficult." Infra-red surveying was useless as a result of "the blanket effect of the damp soil stratum overlying the chalk." Ten tunnels were located and surveyed, with void volumes of 15, 93, 136, 148, 159, 174, 190, 198 and 231 m³ (the last being the combined figure for two interconnected tunnels). The longest tunnel was about 47 m long. Details of the drilling and filling are given, drill logs, and accounts for the entire work, which cost £55,027.68.

It is likely that the Great Cornard site is a further example of a small chalk mine worked under, and in association with, a brickyard - perhaps in the last part of the 19th Century: these are relatively well-known in North Kent (Sowan, 1976; Pearman, 1981; Le Gear, 1981; Down 1978), around Reading (Carter, 1979) etc. At nearby Little Cornard (Anon, 1980) there are the Little Cornard Brickpits, an SSSI, where "Three pits, originally dug by hand, lie at different levels on the flank of Kedington Hill and once provided a variety of sands and clays suitable for on-site brick making." These brickworks closed in 1965.

Elsewhere in Suffolk there are doubtless further such underground chalk workings. Subterranea Britannica has on file records of some at "Horringer Caves", now a reserve for bats, with about 1,600 ft of tunnels underlying two acres of land (Anon, 1971), and the better-known site at Bury St Edmunds described by Pearman (1969, 1977).

References

- ANON : Horringer Caves. Newsletter Suffolk Trust for Nature Conservation Spring 1971, p. 25. 1971
- ANON : Little Cornard Brickpits, Suffolk. Earth Science Conservation 18, 10-11. 1980
- ANON : Pupils sent home after tunnel is found under school. The Times, 22 May 1980
- CARTER, H.H. : Mining for Chalk. Reading Naturalist 31, 16-17. 1979
- DOWN, C.G. : Some Aspects of Stone Mining in Britain. Bull. Subterranea Britannica, 8, 3-6. 1978

Great Cornard Chalk Workings (continued) .

- HALCROW, Sir William, and Partners : Pot Kiln Primary School, Great Cornard. Final Report on Investigation and Remedial Works to Chalk Workings. (For) Suffolk County Council, 33 pp. + folding plan. 1981
- LE GEAR, R.F. : Shepherd's Lane Chalk Mine, Dartford, Historical Notes. Newsl. Chelsea Speleological Society 23(4), 34-35. 1981
- PEARMAN, H. : A lamp-post makes a Great Belay! Descent 5 (July 1969), 26-29. 1969
- PEARMAN, H. : Jacqueline Close Chalk Mine, Suffolk. Bull. Subterranea Britannica 5, 4-7. 1977
- PEARMAN, H. : A Chalk Mine at Dartford. Description. Newsl. Chelsea Speleological Society 23(4), 30-33. 1981
- SOWAN, P.W. : Chalk Mines in Surrey as a Source of Freestone. Proc. Croydon Natural History & Scientific Society 16(2), 82-87, 1976.

NOTTINGHAM STUDY WEEKEND - JUNE 1982

Robin C. Coleman

The weekend in June began on Friday evening with an informal gathering at the Loggerheads pub in the city, which enabled us to meet some of our 28 visitors and hand round the programme of events.

After some general discussion on the forthcoming visits, slides were presented depicting various features which were related to the theme of the weekend e.g. caves and underground quarries, but which would not be seen due to their distance from Nottingham.

Saturday morning saw the party collected on the car park of the Savoy Hotel at which point the choice had to be made as to which of the two available trips the visitors were to be attached. The need for this came from the limited number able to visit the Gotham gypsum mines where access was by Land Rover. Having split, the groups boarded two minibuses and each went their own way.

At Gotham we met the mine manager who showed us a large plan of the workings and explained the various stages in the growth of the mine to its present state, and outlined plans to extend the workings by a new roadway and mining method which he had devised. The mine itself is cut in the traditional pillar-and-stall technique, but on a more regular plan than the older workings.

Having answered various questions about the mine, and pointed out that due to age and the nature of the ground overhead a large part of the old mine had been bricked off, the manager handed over the party to the shift foreman who was to take them into the mine. Because of the restricted number I remained on the surface and was shown some photographs of the old workings and the machines that were used; also some of the new machinery now in use.

Various artifacts have been found in the older parts and include rammers and spikes for filling the shot holes, fuses, a box of matches, some remains of candles, and a sheet of an old newspaper.

After the party had returned to daylight we thanked our hosts and departed rapidly for our lunchtime rendezvous in Nottingham at a Chinese restaurant. The second half of the group had meantime been looking at caves within the city. After leaving the Savoy by minibus they were taken to the Brewhouse Yard at the foot of the Castle rock. From here a short walk up to the Castle

Nottingham Study Weekend (continued)

grounds brought them to the entrance of Mortimer's Hole which leads down through the rock by various chambers and passages and eventually opens into the air in Brewhouse Yard. After walking round the base of the rock the entrance to the Western Passage is found, leading up the cliff and eventually out into the Castle grounds not far from the first descent. The origins of these and other passages in the rock are not very clear and have been much elaborated through time and legend.

The next venue was No 8 Castle Gate. The caves here represent one of the most complete examples of underground maltings in the City; others exist but are much altered or mutilated by more recent usage.

After leaving this system the party set off on foot across the city heading for the Dog and Bear public house on Bridlesmith Gate, while two of the locals went ahead to collect a ladder for access to the caves. Once again the exact use of the caves is not clear, but from evidence in the rock at various places it appears to have been used by the pub as cellars; this is no longer the case as the beer is kept in "new" cellars above.

When the party left the caves they were asked to help remove surplus equipment, which had been left by a group after clearing rubbish to enable our survey to be completed. The equipment was mostly power cables, lights and transformers, which were then taken to caves due to be visited the next day. Once again the journey from these caves to the restaurant was made on foot, whilst the minibus was collected from its morning parking and driven round for the afternoon pick-up. By a miracle of good timekeeping and fast driving both halves of the party arrived within about 10 minutes of each other.

After lunch both buses headed out towards Cromford, one group to view the Good Luck lead mine above the village and the other to see the Matlock mining Museum, which contains photographs of some of the mines and tunnels, also many maps and diagrams, and some of the tools and machines connected with mining; and the Temple Mine which is just across the road.

Later the two groups changed places, so everyone could view all three sites.

Our next port of call was the underground control room at Watnall (near Nottingham), which was one of two used during the war to control the movement of aircraft from the nearby airfield. Due to the half-buried nature of this concrete structure and the fact that it is used by a rifle club, and had been affected by smoke from fires started inside, the air was not very fresh. We were guided round the various dark passages and stairways until we finally arrived in the room that housed the plotters' table. Here we were given a run-down of the history of the building and how it worked. Thanks to the local vandals and scrap-metal men, nothing of the original fittings can be seen; nevertheless it is an interesting structure.

Once again back to the buses for the dash to hotels and then the Loggerheads for a buffet supper, during which many questions were raised and answered on far wider matters than caves (a feature of the whole weekend.)

After a rather hectic Saturday, Sunday was to be more relaxed (but only just). The groups assembled once again at the Savoy and were taken by the minibuses to a point near the old Victoria Station cutting and tunnel (now a Shopping Centre). At this point the buses returned to base.

The second port of call was Peel Street caves, which were sand mines under common land. Passing quickly through a section which had been used during air raids and into the caves proper, the group was taken round to the various

Nottingham Study Weekend (continued)

points of special interest and then allowed to split up and go round, with a local guide, at leisure.

Soon the call to move came along and we set off once again, this time into the Cemetery on Forest Road. Here the caves had been cut out for sand but also possibly to be used as burial vaults, but there is no evidence to prove this. It was at this point that one of the party gave a brief outline of how Bunter Sandstone was formed in a shallow lake at the end of a small river.

On again, on foot, to Bridlesmith Gate in the centre of the City. Here there are four sets of caves in very close proximity. All appear to be either for storage or connected with manufacture in some way. Being fairly small caves it was necessary again to split up the party, which did present the hazard of groups moving from one cave to another getting tangled up in the restricted cellar area. Time once again chased us on, from the caves to the restaurant round the corner for a good lunch with the usual drinks.

After lunch a short walk took us to Middle Pavement and our most difficult access of the day - a 32-foot springy aluminium ladder. Once below ground, one of the most baffling sets of caves unfolds. From the now-blocked stair entrance the system appears to be a typical malting complex with kiln, a well opposite and a small cave nearby; but further on the use becomes less obvious and rather confused with pits and wells dotted about with no clear purpose. Two of the caves have cut-through features relating to earlier uses at a different level. Much work still needs to be done to unfold the picture.

After bouncing back up the ladder our next call was Goose Gate with two parallel systems of connected but different caves. From evidence found, both within the caves themselves and from documentary sources, we can prove that they were last used by a butcher and a brewery, with the butcher's side being used again as air raid shelters during the war. Prior to the butcher the use is unknown. Evidence in the brewery side leads us to the caves having been used for malting at an earlier date.

Because of the impending rail strike some of the group had to dash off, but those that remained went on to visit the Drury Hill or Broad Marsh Caves. Confusion arises over the name as they were originally found under Drury Hill which has now been demolished, and the Broad Marsh shopping complex has been built over its route.

Here again, many uses can be found within this system, including tanning, and use as an ale house. We are very lucky to have these caves, their survival being due to the fight put up by the Nottingham Historical Arts Society which stepped in to do a rescue dig and ended up fighting the developers, who eventually changed their plans and protected the caves rather than destroy them.

After an extended tour of this system the party finally broke up and went away in their various directions, taking with them, I hope, a picture of Nottingham which most of the inhabitants don't have.

Many thanks to those who came to visit us, and also to all the local guides and drivers without whose help this weekend would not have been possible.

Footnote

As all the caves in Nottingham have been used by several different people at various times it is, so far, impossible to say when they were cut or for what original use. All we can do is date them from the finds in the filling, which gives us dates from 12th-13th Century, approximately.

